



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/548,912	04/13/2000	Brian Mitchell Bass	RAL9-00-0017	7377

25299 7590 07/18/2003

IBM CORPORATION  
PO BOX 12195  
DEPT 9CCA, BLDG 002  
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

PHUNKULH, BOB A

ART UNIT	PAPER NUMBER
----------	--------------

2661

DATE MAILED: 07/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/548,912

Applicant(s)

BASS ET AL.

Examiner

Bob A. Phunkulh

Art Unit

2661

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☒ Claim(s) 1-3 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4, 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Drawings*

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

### *Specification*

2. The disclosure is objected to because of the following informalities: please provides the remaining application numbers cited in pages 2-3.

Appropriate correction is required.

### *Claim Objections*

3. Claim 1 is objected to because of the following informalities: please correct "said the other calendar" in line 9 and "the other calendar" in lines 9-11, to either --one time-based calendar-- or --one time-independent calendar-- since there are more than two calendars cited in the claim. Appropriate correction is required.

4. Claim 2 is objected to because of the following informalities: please correct the subject matter "from" in line 16, to --to--. Appropriate correction is required.

5. Claim 3 is objected to because of the following informalities: if the subject matter "the time interval" cited in line 3 is referring to "time cycle" in claim 1<sup>2</sup>, please correct the subject matter to --time cycle--. Appropriate correction is required.

### ***Double Patenting***

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claim 2 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of copending Application No. 09/548,910 in view of Ohba (US 6,101,193).

Claim 2 of copending Application No. 09/548,910 fails to claimed the selecting one of the queues includes selection from a weighed fair queue including calculating a new position in the weighted queue based on the size of the packet and the weighted factor of the information unit selected.

Ohba, on the other hand, discloses the packet output unit 30 outputs a top packet from the packet queue 20 which is specified by the scheduling information given from the scheduling unit 42. The packet queues 20 can be assigned with independent weights for the purpose of packet output, and the counter value for each flow in the memory unit 41 holds an amount of packets that are currently transmittable from the

Art Unit: 2661

packet queue 20 for each flow which is determined from the weight value and the packet length of the output packet (**see col. 5 lines 36-45**).

Therefore, it would have been obvious to one having ordinary skilled in the art at the time of invention was made to includes the teaching of Ohba especially selecting the next service queues based on the assigned weighed queue and the length of packet in queue in the copending application for providing fairness when selecting queues for service and in order to avoid over flow in the input queue –thus avoid discarding incoming packets due to over flow in the queue.

This is a provisional obviousness-type double patenting rejection.


***Claim Rejections - 35 USC § 112***

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 1 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, the claimed subject matter "chosen from the first, second, and third calendars" cited in lines 14-15 is vague and indefinite since the metes and bounds of the claimed subject matter



10. Claim 3 recites the limitation "the step of providing" in line 1. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

12. Claims 2-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Ohba (US 6,101,193).

13. **Regarding claim 2**, Ohba discloses a method of selecting during any processing cycle one processed information unit (*frames or packets or ATM cells*) from in a plurality of information units ready at that time for transmission from a network processor toward a data transmission network, the method comprising the steps of.

-receiving priority information about each of the information units ready for processing (**see col. 5 lines 27-35**);

-placing each information unit ready for transmission into one of several prioritized queues based on the priority information associated with each processing unit, one of the queues being time-based and an other one of the queues being time independent (*one of the active queue 44 acts as time-based queue and the other as time-independent queue, see col. 5 lines 37-45 and col. 5 lines 54 to col. 6 line 8*);

-selecting one of the queues to service at each time cycle based on a stored set of rules and selecting one of the information units from the selected queue according to an algorithm, said selection from a weighted fair queue including calculating a new position in the weighted fair queue based on the size of the packet and the weighting factor for the information unit selected (*the scheduling unit has first and second scheduling queues for holding the scheduling information corresponding to top packets of non-empty packet queues; the first scheduling queue holds the scheduling information of those packet queues for which a value obtained by subtracting a packet length of a top packet from a corresponding counter value is greater than or equal to 0, while the second scheduling queue holds the scheduling information of those packet queues for which a value obtained by subtracting a packet length of a top packet from a corresponding counter value is less than 0; the scheduling unit takes out one scheduling information from the first scheduling queue, at a time of packet output, see col. 3 line 30 to col. 4 line 7*); and

-sending the selected information unit to the network.

14. **Regarding claim 3**, Ohada discloses providing a back pressure indicator when the output for a given queue is not empty, preventing that queue from being selected during the time cycle (*if the output packet queue does not become empty as a result of said packet output and the scheduling information for a new top packet of the output packet queue resulting from said packet output is to be entered into the first scheduling queue; the scheduling unit increments a corresponding counter value as much as a*

Art Unit: 2661

*value of a corresponding weight, if the output packet queue does not becomes empty as a result of said packet output and the scheduling information for a new top packet of the output packet queue resulting from said packet output is to be entered into the second scheduling queue; and the scheduling unit switches the first scheduling unit and the second scheduling unit, if the first scheduling queue becomes empty as a result of said packet output, see col. 3 lines 61 to col. 4 line 8; and figures 2-5 show a feedback line from output unit 30 to inputs of queues in scheduling unit 42).*

### **Claim Rejections - 35 USC § 103**

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duffield et al. (US 6,452,933), hereinafter Duffield, in view of Ohba (US 6,101,193).

17. **Regarding claim 1**, Duffield discloses an apparatus for scheduling the movement of information units (*packet or ATM cells*) from a plurality of sources to an output destination based on information stored about each of the plurality of sources, the apparatus comprising:

-at least one time-based calendar which handles some of the information units based on the information stored about the plurality of sources based on a bandwidth



Art Unit: 2661

service (*the RPS server 40 server (based on WFQ scheme) is time-based calendar that serves packets releases from the packet shapers 30 with a rate exactly equal to the allocated rate, see figure 2; col. 2 lines 8-48; and col. 4 lines 28-40*);

-at least one time-independent calendar which handles other of the information units in a flow queue based on information stored in the flow queue (*a shared memory 25*), said other calendar providing a sequence of frames (*packets*) awaiting being moved and a weighting factor, where, after a frame is moved using the other calendar, a new position for that flow queue in the other calendar is calculated based on its weighting factor (*packets are temporarily stored in the queues 20a, . . . 20i. A weight is assigned with each of these queues representing the portion of the output bandwidth that must be allocated to the packets arriving in each of the queues, see col. 4 lines 6-15; and when at least one of the scheduler queues is empty, the state SDS 200 is invoked to select a packet from the queues 20a, . . . ,20i for transmission with the service offered to a connection not affecting the state of the shaper 30, see col. 4 lines 40-45 and claim 7*);

-a timer which periodically generates a signal which moves a single information unit to the output destination, with the single information unit chosen from the first, second and third calendars based on stored rules (*the function of a scheduling method is to select, for each outgoing link of a switch, the packet to be transmitted in **the next cycle** from the available packets belonging to the communication sessions sharing the output link, see col. 1 lines 30-34; and the multiplexer element 350 multiplex or*

Art Unit: 2661

*selects either packets from RPS 40 or RPS 200 via link 50 or link 75, respectively, and forwarded to its next destination, see figure 2 and col. 5 line 28-34 and claim 7).*

Duffield fails to disclose the time-independent calendar or SDS 200 selecting or calculating the queue for service based on frame length or packet length.

Ohba, on the other hand teaches the scheduler unit 42 selects packet queues 20 for service based on the packet length stored in the queues and the weights assigned to the queues 20 (see figure 1 and col. 1 line 59-67, and col. 2 lines 43-55).

Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention was made to replace the SDS 200 of Duffield with the packet scheduler of Ohba for providing the apparatus with ability to service fixed length packets or frames and variable-length packets or frames while still providing the apparatus with capability to redistribute any unused bandwidth in a state-dependent manner i.e. that reflects instantaneous needs of the remaining backlogged traffic flows.

### ***Conclusion***

**18. Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

Art Unit: 2661

(703) 872-9314, (for formal communications intended for entry)

**Or:**

Hand-delivered responses should be brought to Crystal Park II, 2021

Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Bob A. Phunkulh** whose telephone number is **(703) 308-8251**. The examiner can normally be reached on Monday-Friday from 8:00 A.M. to 4:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor **Douglas W. Olms**, can be reach on **(703) 305-4703**. The fax phone number for this group is **(703) 872-9314**.

**Bob A. Phunkulh**



TC 2600  
Art Unit 2661  
July 14, 2002